

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (currently amended) A method of reducing the damage done by reactive oxygen species (ROS) in an animal comprising administering to the animal an effective amount of a metal-binding peptide which does not have a metal ion bound to it, and the peptide binds a metal ion present in the animal, with the result that the damage done by the ROS is reduced, the sequence of the peptide being:

$$P_1 - P_2,$$

wherein:

$P_1$  is:

Xaa<sub>1</sub> Xaa<sub>2</sub> His or

Xaa<sub>1</sub> Xaa<sub>2</sub> His Xaa<sub>3</sub>;

$P_2$  is (Xaa<sub>4</sub>)<sub>n</sub>;

Xaa<sub>1</sub> is the N-terminal amino acid of the peptide, Xaa<sub>1</sub> has an unsubstituted  $\alpha$ -amino group, and Xaa<sub>1</sub> is glycine, alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, asparagine, glutamic acid, glutamine, lysine, hydroxylysine, histidine, arginine, ornithine, phenylalanine, tyrosine, tryptophan, cysteine, methionine, or  $\alpha$ -hydroxymethylserine;

Xaa<sub>2</sub> is glycine, alanine,  $\beta$ -alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, asparagine, glutamic acid, glutamine, lysine, hydroxylysine, histidine, arginine, ornithine, phenylalanine, tyrosine, tryptophan, cysteine, methionine, or  $\alpha$ -hydroxymethylserine;

Xaa<sub>3</sub> is glycine, alanine, valine, lysine, arginine, ornithine, aspartic acid, glutamic acid, asparagine, glutamine or tryptophan;

Xaa<sub>4</sub> is any amino acid; and

n is 0-100;

or a physiologically-acceptable salt thereof.

2. (original) The method of Claim 1 wherein Xaa<sub>1</sub> is aspartic acid, glutamic acid, arginine, or  $\alpha$ -hydroxymethylserine.
3. (original) The method of Claim 1 wherein Xaa<sub>2</sub> is glycine, alanine, valine, leucine, isoleucine, threonine, serine, asparagine, methionine, histidine or  $\alpha$ -hydroxymethylserine.
4. (original) The method of Claim 1 wherein Xaa<sub>3</sub> is lysine.
5. (original) The method of Claim 1 wherein Xaa<sub>1</sub> is aspartic acid, glutamic acid, arginine, or  $\alpha$ -hydroxymethylserine, Xaa<sub>2</sub> is glycine, alanine, valine, leucine, isoleucine, threonine, serine, asparagine, methionine, histidine or  $\alpha$ -hydroxymethylserine, and Xaa<sub>3</sub> is lysine.
6. (original) The method of Claim 5 wherein Xaa<sub>1</sub> is aspartic acid or glutamic acid and Xaa<sub>2</sub> is alanine, glycine, valine, threonine, serine, or  $\alpha$ -hydroxymethylserine.
7. (original) The method of Claim 6 wherein Xaa<sub>2</sub> is alanine, threonine or  $\alpha$ -hydroxymethylserine.
8. (original) The method of Claim 7 wherein Xaa<sub>1</sub> is aspartic acid and Xaa<sub>2</sub> is alanine.
9. (original) The method of Claim 1 wherein n is 0-10.
10. (original) The method of Claims 9 wherein n is 0-5.
11. (original) The method of Claim 10 wherein n is 0.
12. (withdrawn) The method of Claim 1 wherein P<sub>2</sub> comprises a metal-binding sequence.
13. (withdrawn) The method of Claim 12 wherein P<sub>2</sub> comprises one of the following sequences: (Xaa<sub>4</sub>)<sub>m</sub> Xaa<sub>3</sub> His Xaa<sub>2</sub> Xaa<sub>5</sub>,  
(Xaa<sub>4</sub>)<sub>m</sub> His Xaa<sub>2</sub> Xaa<sub>5</sub>,  
(Xaa<sub>4</sub>)<sub>m</sub> Xaa<sub>5</sub> Xaa<sub>2</sub> His Xaa<sub>3</sub>, or  
(Xaa<sub>4</sub>)<sub>m</sub> Xaa<sub>5</sub> Xaa<sub>2</sub> His,  
wherein Xaa<sub>5</sub> is an amino acid having a free side-chain -NH<sub>2</sub> and m is 0-5.
14. (withdrawn) The method of Claim 13 wherein Xaa<sub>5</sub> is Orn or Lys.

15. (withdrawn) The method of Claim 1 wherein at least one of the amino acids of  $P_1$  other than  $\beta$ -alanine is a D-amino acid.

16. (withdrawn) The method of Claim 15 wherein  $Xaa_1$  is a D-amino acid, His is a D-amino acid, or both  $Xaa_1$  and His are D-amino acids..

17 (withdrawn) The method of Claim 16 wherein all of the amino acids of  $P_1$  other than  $\beta$ -alanine are D-amino acids.

18. (withdrawn) The method of Claim 15 wherein at least 50% of the amino acids of  $P_2$  are D-amino acids.

19. (withdrawn) The method of Claim 16 wherein at least 50% of the amino acids of  $P_2$  are D-amino acids.

20. (withdrawn) The method of Claim 17 wherein at least 50% of the amino acids of  $P_2$  are D-amino acids.

21. (original) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because of the need to reperfuse an ischemic tissue or organ of the animal.

22. (original) The method of Claim 21 wherein the animal is suffering from cerebrovascular ischemia and the ischemic tissue is located in the brain of the animal.

23. (original) The method of Claim 21 wherein the animal is suffering from cardiovascular ischemia and the ischemic tissue is located in the heart of the animal.

24. (original) The method of Claim 21 wherein the peptide is administered prior to reperfusion, simultaneously with reperfusion, after reperfusion, or combinations thereof.

25. (withdrawn) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because of neurological trauma.

26. (withdrawn) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from a neurodegenerative disease.

27. (canceled)

28. (previously presented) The method of any one of Claims 1-20 wherein the peptide is administered to an animal exhibiting symptoms of possible cerebrovascular ischemia or possible cardiovascular ischemia while the animal is being diagnosed.

29. (previously presented) The method of any one of Claims 1-20 wherein the peptide is administered to an animal prior to surgery, during surgery, after surgery, or combinations thereof.

30. (original) The method of Claim 29 wherein the surgery is open-heart surgery or surgery to transplant an organ into the animal.

31. (withdrawn) The method of any one of Claims 1-20 wherein the peptide is administered to an animal prior to radiation therapy, during radiation therapy, after radiation therapy, or combinations thereof.

Claims 32 - 374 (canceled)

375. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from ischemia.

376. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from ischemia of the central nervous system.

377. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from a stroke.

378. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from cardiovascular ischemia.

379. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from myocardial ischemia.

380. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from acute myocardial infarction.

381. (previously presented) The method of any one of Claims 1-20 wherein the animal is in need of the peptide because it is suffering from angina pectoris.